PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent No. 7,038,084	)	Serial No. 10/784,916
Inventor(s): Michael L. VAZQUEZ et al.	)	Filed: February 24, 2004
Issue Date: May 2, 2006	)	Attorney Docket No. 101765.00026

For: SUCCINOYLAMINO HYDROXYETHYLAMINO SULFONAMIDES USEFUL AS RETROVIRAL PROTEASE INHIBITORS

REQUEST FOR CERTIFICATE OF CORRECTION

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building, Mail Stop: Certificate of Correction Branch
401 Dulany Street
Alexandria, VA 22314

Sir:

Pursuant to 35 U.S.C. § 254 and 37 C.F.R. § 1.322, this is a request for the issuance of a Certificate of Correction in the above-identified patent. Two (2) copies of PTO Form 1050 are appended. The complete Certificate of Correction involves 1 page.

The mistakes identified in the appended Form occurred through no fault of the Applicants, as clearly disclosed by the records of the application, which matured into this patent. Enclosed for your convenience a copy of the Response to Restriction Requirement and Election of Species and Response Under 37 C.F.R. § 1.111 which was submitted June 15, 2005.

Issuance of the Certificate of Correction containing the corrections is respectfully requested. Since these changes are necessitated through no fault of the Applicants, no fee is believed to be associated with this request. Nonetheless, should the Patent and Trademark Office determine that a fee is required, please charge our Deposit Account No. 19-0733.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: July 24, 2006

By: _____
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Washington, D.C. 20001
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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.: 7,038,084

DATED: May 2, 2006

INVENTOR(S): Michael L. VAZQUEZ et al.

It is certified that errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Claim 3, Column 57, Line 43:
Please replace: "R^4 radicals" with -- R^4 represents radicals--

Claim 5, Column 58, Line 45:
Please replace: "R^4 radicals" with -- R^4 represents radicals--

Mailing Address of Sender:

Banner & Witcoff, Ltd.
11th Floor
1001 G Street, N.W.
Washington, DC 20001-4597

FORM PTO 1050 (Rev.2-93)

U.S. PAT. NO 7,038,084

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2006

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Michael L. VAZQUEZ et al. Serial No. 10/784,916 Filed: February 24, 2004	Group Art Unit: 1626 Examiner: Pavigianiti, A. J. Atty. Docket 101765.00026 (2704/8)

For: SUCCINOYLAMINO HYDROXYETHYLAMINO SULFONAMIDES USEFUL AS RETROVIRAL PROTEASE INHIBITORS

RESPONSE TO RESTRICTION REQUIREMENT AND ELECTION OF SPECIES

and

RESPONSE UNDER 37 C.F.R. § 1.111

U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

In response to the Office Action mailed March 15, 2005, Applicants respectfully request entry of this paper into the file of the above-captioned application. It is believed that a fee of $130 (for the filing of the Terminal Disclaimer accompanying this response) is due. Please charge our deposit account No. 19-0733 for that amount. However, should any additional fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 19-0733, accordingly.

A LISTING OF CLAIMS reflects claim amendments and begins on page 2 of this paper.

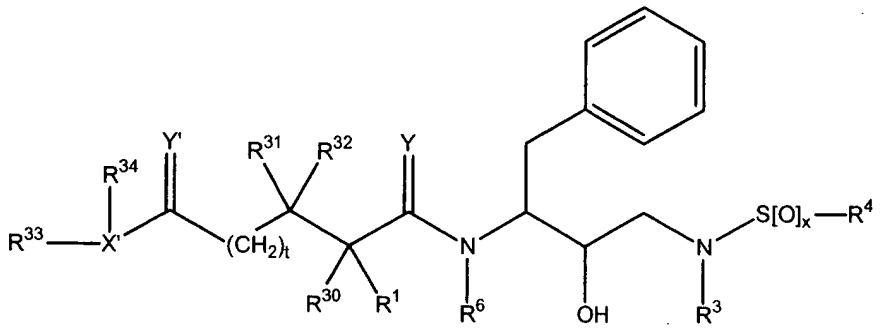
A REMARKS section begins on page 8 of this paper.

A Terminal Disclaimer under 37 C.F.R. § 1.321(c) accompanies this response.

This Listing of Claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

Claim 1 (previously presented): A compound represented by the formula:



or a pharmaceutically acceptable salt, prodrug, or ester thereof wherein:

x represents 0, 1 or 2;

t represents either 0 or 1;

R^1 represents hydrogen, $-CH_2SO_2NH_2$, $-CO_2CH_3$, $-CONHCH_3$, $-CON(CH_3)_2$, $-CH_2C(O)NHCH_3$, $-CH_2C(O)N(CH_3)_2$, $-CONH_2$, $-C(CH_3)_2(SH)$, $-C(CH_3)_2(SCH_3)$, $-C(CH_3)_2(S[O]CH_3)$, $-C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, norleucine, glutamine, valine, threonine, serine, o-alkyl serine, aspartic acid, beta-cyano alanine, and allothreonine side chains;

R^3 represents hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

X' represents N, O, and C(R^{17}) wherein R^{17} represents hydrogen and alkyl radicals;

Y and Y', independently represent O, S and NR15 wherein R15 represents hydrogen and radicals as defined for R^3 ;

R^4 represents radicals as defined by R^3 except for hydrogen;

R^6 represents hydrogen and alkyl radicals;

R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical; or R^{30} and R^{32} together with the carbon atoms to which they are attached form a three to six-membered cycloalkyl radical; and

R^{33} and R^{34} independently represent hydrogen, radicals as defined for R^3, or R^{33} and R^{34} together with X' represent cycloalkyl, aryl, heterocyclyl and heteroaryl radicals, provided that when X' is O, R^{34} is absent.

Claims 2-65 (canceled)

Claim 66 (previously presented): A pharmaceutical composition comprising the compound of Claim 1 and a pharmaceutically acceptable carrier.

Claim 67 (canceled)

Claim 68 (withdrawn): A method of inhibiting a retroviral protease comprising administering a protease inhibiting amount of the composition of Claim 66.

Claim 69 (withdrawn): The method of Claim 68 wherein the retroviral protease is HIV protease.

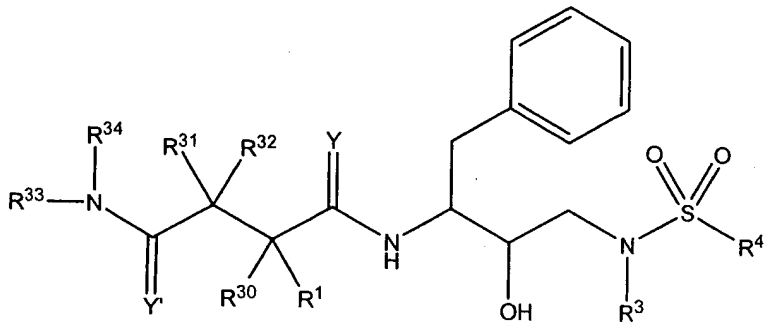
Claim 70 (withdrawn): A method of treating a retroviral infection comprising administering an effective amount of the composition of Claim 66.

Claim 71 (withdrawn): The method of Claim 70 wherein the retroviral infection is an HIV infection.

Claim 72 (withdrawn): A method for treating AIDS comprising administering an effective amount of the composition of Claim 66.

Claims 73-77 (canceled)

Claim 78 (previously presented): A compound represented by the formula:



or a pharmaceutically acceptable salt, prodrug, or ester thereof wherein:

R^1 represents hydrogen, $-CH_2SO_2NH_2$, $-CO_2CH_3$, $-CONHCH_3$, $-CON(CH_3)_2$, $-CH_2C(O)NHCH_3$, $-CH_2C(O)N(CH_3)_2$, $-CONH_2$, $-C(CH_3)_2(SH)$, $-C(CH_3)_2(SCH_3)$, $-C(CH_3)_2(S[O]CH_3)$, $-C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, norleucine, glutamine, valine, threonine, serine, o-alkyl serine, aspartic acid, beta-cyano alanine, and allothreonine side chains;

R^3 represents hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

R^4 represents radicals as defined by R^3 except for hydrogen;

R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical;

R^{33} and R^{34} independently represent hydrogen, radicals as defined for R^3, or R^{33} and R^{34} together with the nitrogen atom to which they are attached represent heterocycloalkyl and heteroaryl radicals; and

Y and Y', independently represent O, S and NR^{15} wherein R^{15} represents hydrogen and radicals as defined for R^3.

Claims 79-125 (canceled)

Claim 126 (previously presented): A pharmaceutical composition comprising the compound of Claim 78 and a pharmaceutically acceptable carrier.

Claim 127 (withdrawn): A method of inhibiting a retroviral protease comprising administering a protease inhibiting amount of the composition of Claim 126.

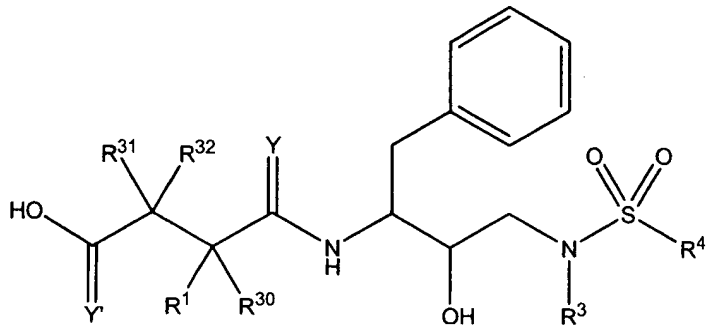
Claim 128 (withdrawn): The method of Claim 127 wherein the retroviral protease is HIV protease.

Claim 129 (withdrawn): A method of treating a retroviral infection comprising administering an effective amount of the composition of Claim 126.

Claim 130 (withdrawn): The method of Claim 129 wherein the retroviral infection is an HIV infection.

Claim 131 (withdrawn): A method for treating AIDS comprising administering an effective amount of the composition of Claim 126.

Claim 132 (previously presented): A compound represented by the formula:



(III)

or a pharmaceutically acceptable salt, prodrug, or ester thereof wherein:

R^1 represents hydrogen, $-CH_2SO_2NH_2$, $-CO_2CH_3$, $-CONHCH_3$, $-CON(CH_3)_2$, $-CH_2C(O)NHCH_3$, $-CH_2C(O)N(CH_3)_2$, $-CONH_2$, $-C(CH_3)_2(SH)$, $-C(CH_3)_2(SCH_3)$, $-C(CH_3)_2(S[O]CH_3)$, $-C(CH_3)_2(S[O]_2CH_3)$, alkyl, haloalkyl, alkenyl, alkynyl and cycloalkyl radicals and amino acid side chains selected from asparagine, S-methyl cysteine and the corresponding sulfoxide and sulfone derivatives thereof, glycine, leucine, isoleucine, allo-isoleucine, tert-leucine, phenylalanine, ornithine, alanine, norleucine, glutamine, valine, threonine, serine, o-alkyl serine, aspartic acid, beta-cyano alanine, and allothreonine side chains;

R^3 represents hydrogen, alkyl, haloalkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, cycloalkyl, cycloalkylalkyl, heterocycloalkyl, heteroaryl, heterocycloalkylalkyl, aryl, aralkyl, heteroaralkyl, aminoalkyl and mono- and disubstituted aminoalkyl radicals, wherein said substituents are selected from alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl, heteroaryl, heteroaralkyl, heterocycloalkyl, and heterocycloalkylalkyl radicals, or in the case of a disubstituted aminoalkyl radical, said substituents along with the nitrogen atom to which they are attached, form a heterocycloalkyl or a heteroaryl radical;

Y and Y', independently represent O, S and NR^{15} wherein R^{15} represents hydrogen and radicals as defined for R^3;

R^4 represents radicals as defined by R^3 except for hydrogen; and

R^{30}, R^{31} and R^{32} represent radicals as defined for R^1, or one of R^1 and R^{30} together with one of R^{31} and R^{32} and the carbon atoms to which they are attached form a cycloalkyl radical; or R^{30} and R^{32} together with the carbon atoms to which they are attached form a cycloalkyl radical.

Claims 133-166 (canceled)

Claim 167 (previously presented): A pharmaceutical composition comprising the compound of Claim 132 and a pharmaceutically acceptable carrier.

Claim 168 (withdrawn): A method of inhibiting a retroviral protease comprising administering a protease inhibiting amount of the composition of Claim 167.

Claim 169 (withdrawn): The method of Claim 168 wherein the retroviral protease is HIV protease.

Claim 170 (withdrawn): A method of treating a retroviral infection comprising administering an effective amount of the composition of Claim 167.

Claim 171 (canceled)

Claim 172 (withdrawn): A method for treating AIDS comprising administering an effective amount of the composition of Claim 167.

Claim 173 (canceled)

REMARKS

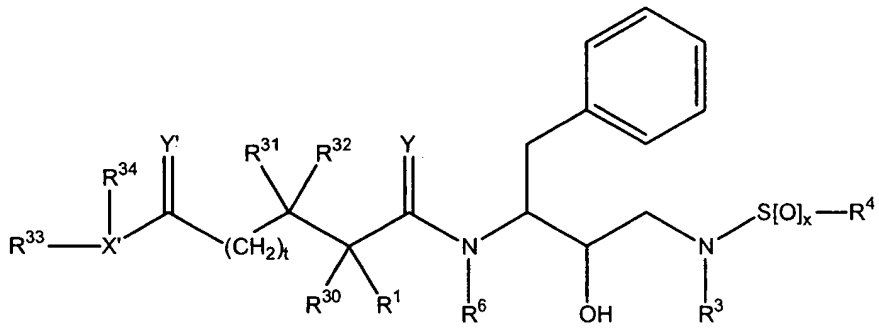
Claims 1, 66, 68-72, 78, 126-132, 167-170, and 172 are pending in this application. Claims 68-72, 127-131, 168-170, and 172 have been withdrawn as being directed to non-elected subject matter, in view of the Restriction Requirement imposed in a phone conversation with Applicants' undersigned representative on February 10, 2005.

Restriction Requirement under 35 U.S.C. §121 and Election of Species

i) Election

The Office Action has imposed a restriction requirement between the compounds of Group I (claims 1, 66, 78, 126, 132, and 167), and the methods of their use of Group II (claims 68-72, 127-131, 168-170, and 172). This restriction requirement acknowledges that the subject matter of Groups I and II constitute separately patentable inventions. MPEP § 806.04(h).

In response, Applicants affirm the provisional election of the invention of Group I, as indicated in the February 10, 2005 phone conversation between the Examiner and Applicants' undersigned representative. Claim 1 of Group I recites a compound represented by the formula:

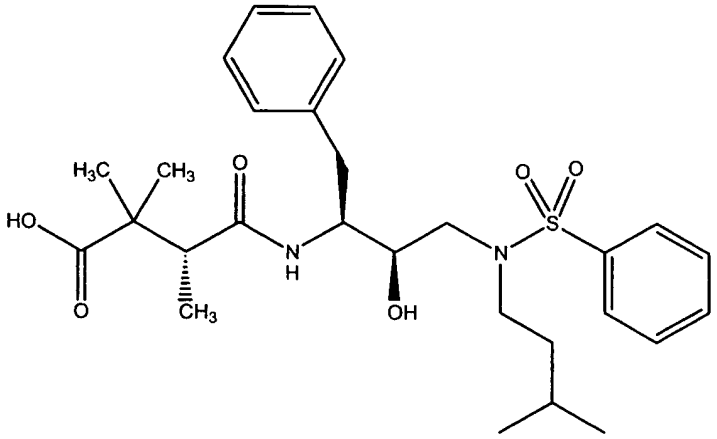


or a pharmaceutically acceptable salt thereof, wherein x, t, R^1, R^3, X', Y, Y', R^4, R^6, R^{30}, R^{31}, R^{32}, R^{33}, and R^{34} are as defined in claim 1.

Applicants also hereby affirm the provisional election for examination the species which is the compound:

[1S-[1R*(S*),2S*]]-4-[[2-hydroxy-3-[(3-methylbutyl)(phenylsulfonyl)amino]-1-(phenylmethyl) propyl]amino]-2,2,3-trimethyl-4-oxo-butanoic acid.

This compound has the structure



and is a compound of claim 1, wherein x is 2, t is 0, R^1 is methyl (an alkyl radical, as claimed), R^3 is i-amyl (an alkyl radical, as claimed), X′ is O, Y is O, Y′ is O, R^4 is phenyl (an aryl radical, as claimed), R^6 is hydrogen, R^{30} is hydrogen, R^{31} is methyl (an alkyl radical, as claimed), R^{32} is methyl (an alkyl radical, as claimed), R^{33} is hydrogen, and since X′ is O, R^{34} is absent (as claimed).

The elected species is described in Example 6, Part B, at page 36, line 26 to page 37, line 9 of the specification, with respect to its synthesis. The elected species is described with respect to its molecular weight determination in Table 1, Entry 2, at page 39 of the specification. The elected species is described with respect to its measured retroviral protease inhibitory activity (IC_{50}) and biological efficacy (EC_{50}) in Table 9, Entry 1, at page 65 of the specification.

Claims 1, 66, 132, and 167 read on this elected species.

ii) Compounds Embracing the Elected Species and within the Same Inventive Concept

Pages 4-6 of the Office Action state

> . . .upon election of a single compound, the Office will review the claims and disclosure to determine the scope of the independent invention encompassing the elected compound (compounds which are so similar thereto as to be within the same inventive concept and reduction to practice).
>
> * * *
>
> If desired upon election of a single compound, applicants can review the claims and disclosure to determine the scope of the invention and can **set forth** a group of compounds, which are so similar within the same inventive concept and reduction to practice (emphasis in original).

In response, Applicants respectfully submit that the entire scope compounds embraced by claim 1, is within the same "inventive concept." This is evidenced by the issuance of related U.S. Patent Nos. 6,727,282; 6,469,207; 6,313,345; 6,022,994; 5,760,076; 5,714,605 and 5,463,104, having claims of comparable or even broader scope than the now-pending elected claims of Group I. As such, claims 1, 66, 78, 126, 132, and 167 are directed to a single invention and should be examined without restriction among Markush group members.

In particular, now that Applicants have complied with the election-of-species requirement, they are entitled to full examination on the merits of elected claims 1, 66, 78, 126, 132, and 167 of Group I. According to MPEP § 803.02, in Markush claim practice,

> ...the examiner may require a provisional election of a single species prior to examination on the merits. ...Following election, the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. If the Markush-type claim is not allowable over the prior art, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration. (emphasis added).
>
> . . . .
>
> On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the

> Markush-type claim with respect to a *non-elected species*, the Markush-type claim shall be rejected and claims to the nonelected species held withdrawn from further consideration.

Furthermore, MPEP § 803.02 states, "[I]t is improper for the Office to refuse to examine that which applicants regard as their invention, unless the subject matter in a claim lacks unity of invention." (emphasis added). Unity of invention is based on well-settled judicial precedent. For example, the MPEP cites *In re Harnisch* and *Ex parte Hozumi*. 206 U.S.P.Q. 300 (C.C.P.A. 1980) and 3 U.S.P.Q.2d 1059 (Bd. Pat. App. & Int. 1984). In *Harnisch*, the Court of Customs and Patent Appeals rejected the imposition of a restriction requirement in a Markush-type claim where all of the compounds had a single use, and thus had unity of invention. Likewise, in *Hozumi*, the Board of Patent Appeals and Interferences (hereinafter "Board") reversed a rejection of a Markush-type claim, where the compounds were core structures having plural diverse pendant moieties.

Other decisions reinforce the proposition that unity of invention is based on a common utility. For example, in *In re Jones*, the Court of Customs and Patent Appeals reversed the Board's 'improper Markush group' rejection precisely because the claimed compounds had a common function. 162 F.2d 479, 74 U.S.P.Q. 149 (C.C.P.A.1947). In *Ex parte Dahlen*, 42 U.S.P.Q. 208 (Bd. App. 1938), the Board permitted claims to compounds having a common core with pendant widely-varying side chains, because the claimed compounds had common properties.

Based on the above decisions, claims 1, 66, 78, 126, 132, and 167 have unity of invention, because these claims embrace a single inventive concept. The compounds of these claims are retroviral protease inhibitors. These have a single common core and pendant moieties, as set forth in the definitions of x, t, R^1, R^3, X', Y, Y', R^4, R^6, R^{30}, R^{31}, R^{32}, R^{33}, and

R^{34}. No matter which combination of pendant moieties is selected, the resulting compound is a retroviral protease inhibitor. Such compounds may also have other uses, but all are retroviral protease inhibitors. To restrict claims 1, 66, 78, 126, 132, and 167 to any scope less than their full scope is contrary to established precedent and M.P.E.P. guidance.

iii) Rejoinder of Process Claims 68-72, 127-131, 168-170, and 172 (M.P.E.P. § 821.04)

Page 8 of the Office Action states

> Where Applicant[s] elect[] claims directed to the product, and a product claim is subsequently found allowable, withdrawn process claims that depend from or otherwise include all the limitations of the allowable product claims will be rejoined in accordance with the provisions of M.P.E.P. § 821.04.

Applicants have elected product claims. Moreover, the process claims 68-72, 127-131, 168-170, and 172, by virtue of their dependency on the elected product claims, are of the same scope and therefore comply with the requirements under M.P.E.P. § 821.04 for rejoinder. Upon a finding that the elected product claims are allowable, the process claims must be rejoined. See M.P.E.P. § 821.04.

Applicants therefore respectfully request (1) withdrawal of the restriction requirement and (2) rejoinder of withdrawn process claims 68-72, 127-131, 168-170, and 172, upon a finding that the elected product claims are allowable.

The Nonstatutory Double Patenting Rejection of Claims 1, 66, 78, 126, 132, and 167

Claims 1, 66, 78, 126, 132, and 167 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 and 14 of U.S. Patent No. 5,463,104.

In the interest of expediting prosecution, Applicants submit herewith a Terminal Disclaimer in compliance with 37 C.F.R. § 1.321(c) over the above-cited U.S. Patent No. 5,463,104, as well as related U.S. Patent Nos. 6,727,282; 6,469,207; 6,313,345; 6,022,994;

5,760,076; and 5,714,605.

Reconsideration and withdrawal of this rejection are respectfully requested.

"Potential" Double Patenting

The Office Action acknowledges that the pending claims are patentable over U.S. Patent No. 6,515,024 and pending U.S. Application Serial No. 10/315,024.

Applicants respectfully disagree with the Office Action's suggestion that overlap is possible between those compounds embraced by the pending claims and those disclosed in U.S. Patent No. 6,515,024 or U.S. Application Serial No. 10/315,024. The group "$-N(R^4)R^7R^{7'}(CH_2)_nR^8$" (bonded directly to the core sulfur atom) of these disclosures cannot be "di-substituted aminoalkyl radical, substituted with heteroaryl," as proposed in the Office Action's hypothetical "overlapping" compound.

In fact, none of the compounds in the cited references overlap with the claimed compounds.

CONCLUSION

In summary, Applicants have now elected a species, in response the restriction requirement imposed in the Office Action. MPEP § 803.02 requires full examination of claims reading on the elected species. Restriction of claims 1-6, 8, 14, 15, 18, and 19 to any scope less than their full scope is improper.

In view of the Terminal Disclaimer under 37 C.F.R. § 1.321(c), filed herewith, all pending claims of this application are believed to be in condition for allowance. Acknowledgement of the same is respectfully requested, together with rejoinder of withdrawn process claims 68-72, 127-131, 168-170, and 172, as required under M.P.E.P. § 821.04.

This response is believed to completely address all of the substantive issues raised in the Office Action dated March 15, 2005.

Respectfully submitted,

Date: June 15, 2005

By: _____
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Registration No. 29,864

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